Fleet Analysis Toolkit First Version - Short Overview

The purpose of the fleet analysis toolkit is to get a more detailed picture of our (potential) customers' problems regarding mobility. During the steps of the analysis we want to understand the mind-set of our partner and investigate their real needs. If we do it right, we will be able to propose different technical and non-technical solutions that satisfy our customers' needs, lower their costs, or improve their level of service. The steps of the analysis are built on the data acquired from our partner and considers the limitations of the data collection process.

Steps of the analysis:

1. Data acquisition regarding the following types of data:
   a. number of fleets
   b. number of cars in each fleet
   c. car type (truck, van, etc...)
   d. brand and type
   e. type of use (pool car or personal benefit)
   f. annual mileage
   g. drivetrain (gas, diesel, hybrid, electric)
   h. year the car purchased
   i. annual depreciation used
   j. operating hours for dedicated service
   k. behaviour pattern – if available
2. Determining the mobility need regarding the fleet
   a. First we need to create different categories for the mobility need (personal and duty classes are obvious, but other types should be also considered)
   b. We developed an Excel tool to calculate the current mobility needs of the specific customer
   c. The mobility needs can be covered by very different solutions – one of them is the current fleet

     d. The mobility need is a theoretical number that does not have enough information to propose solutions – we need to consider limitations and incentive factors

3. Setting the limitations and incentives

     a. We need to identify what limitations exist to our customer e.g.: budget, available electric energy, number of drivers, etc...

     b. We need to take into consideration what kind of incentives are used, e.g.: governmental support, gaining political capital, etc.

4. Building new goal optimized fleets for the mobility needs

     a. Optimization for budget

     b. Optimization for environmental footprint

     c. Optimization for other goals

5. Test data

In cooperation with Szeged Municipality (160 thousand citizens), we defined the necessary categories, collected the data needed and tested the functionality of the Excel model. The first result are promising, we are continuing the refinement of the model.

Fleet Analysis for Municipality of Szeged:

According to the fleet analysis guideline, Szeged provided data of the fleets that are used by the utility companies of the municipality.

Fleets and Car data are shown in the attached xls sheets. The acquired data had to be filtered and completed at some places to get a coherent database. This process required some estimation from our side in some cases. (e.g. some annual km data were missing)

We created 3 mobility classes within the fleets:

1. personal mobility
2. small duty
3. large duty

We excluded the special purpose vehicles from the analysis. (watering, snowplow cars, trams, buses, etc... also the cross country vehicles)

There were some bigger personal cars, which was classified into the regular personal class (e.g.: 7 or 9 passengers cars like Renault master)

Small duty class means cars that can be replaced with a car like Nissan env200. Large duty class means the size above this level.

We need to set the input parameters. According to the partner, the fleets are used in the city, so consumption estimation is aligned to the given city averages.

On the first table "Cars&Fleets – DB" we can include the database given by the municipality and its companies. This is the main database which is used for the further calculations. On this sheet we also included the virtual vehicles that can be added to the fleet. There is an "active/inactive" column in the table which can be adjusted, if we want to include a new vehicle, or exlude an existing one.

All virtual element is indicated blue. This is applicable for the new "virtual cars" but also true for the datasets that were not given, so they has to be estimated.

On the second "input parmeters" sheet we can add the input parameters regarding the consumptions, the CO2 footprint, the fuel prices for all vehicle categories.

Depriciation index tables shows the annual depreciation of the fleet which is an important factor if the municipality wants to introduce new assets that has to be depreciated annually. This is usually one of the biggest entry barrier of fleet development.

On the "Calculations" sheet we can see the results. On the top, there is shown the values for the original fleet structure, and at the bottom we can see the values of the modified fleet.

We can replace virtually as many vehicles as we like from the old fleet, and get a new mix, by setting the "active/inactive" column values. We can see the possible results on the calculations table.